REMARKS

The Office is thanked for the careful examination of the application. However, in view of the remarks that follow, the Office is respectfully urged to reconsider and withdraw the outstanding rejections.

Allowable Subject Matter

Applicants thank the Office for indicating that claims 4-10 and 13-15 would be allowable if rewritten in independent form. Claim 4 has been amended by the present amendment to place it in independent form. Claims 5-10 and 13-15 depend from claim 4. As such, applicants respectfully request that the Office withdraw the objection of claims 4-10 and 13-15 and indicate the allowability of claims 4-10 and 13-15.

Claim Amendments

Claims 1 and 22 have been amended to make an editorial change.

Claim 4 has been amended by the present amendment to place it in independent form.

Art Rejections

Claims 1-3, 12 and 22 stand rejected under 35 U.S.C. § 102(a) as allegedly being anticipated by Lu et al. (Micropatterns Constructed From Au Nanoparticles). Applicants respectfully traverse this rejection.

Claims 1 and 22 recite a photosensitive metal nanoparticle prepared by (i) forming a self-assembled monolayer of a thiol or isocyanide compound with a terminal reactive group, represented by Formula 1, on the surface of the metal nanoparticle, and then (ii) introducing a photosensitive group through a reaction with the terminal reactive group to the monolayer.

Lu et al. does not teach or suggest every element of the presently claimed invention. For example, does not teach or suggest a metal nanoparticle formed by the presently claimed step (ii). That is, Lu et al. does not teach or suggest introducing a photosensitive group through a reaction with the terminal reactive group or the resultant nanoparticle.

Instead, Lu et al. teaches that the 4-mercaptophenol-capped Au nanoparticle is added to a polymer of nitro-diazo resin and the 4-mercaptophenol-capped Au

nanoparticle simply physically interacts with the polymer by hydrogen bonding. In contrast, according to the presently claimed invention, the photosensitive group reacts with the monolayer. This results in a covalent bond. Lu et al. does not teach or suggest such a reaction to provide the presently claimed metal nanoparticle.

This distinction between the nanoparticles disclosed in Lu et al. and the presently claimed photosensitive nanoparticles is further evidenced in the mechanism by which patterns are formed from each. The film of nanoparticles disclosed by Lu et al. is patterned by irradiation which causes a reaction, forming covalent bonds to replace the physical interaction of the hydrogen bonding. A pattern is formed from the difference in solubilities between parts of the film that are covalently bonded versus parts of the film with only hydrogen bonding. In contrast, the photosensitive nanoparticles of the presently claimed invention may be patterned, for example, by irradiation which polymerizes the metal nanoparticle monomers. A pattern may be formed from the difference in solubilities between the polymerized nanoparticles and the nanoparticle monomers. Thus, the disclosed patterning mechanisms are significantly different and this difference results from differences between the nanoparticle disclosed in Lu et al. and the nanoparticle of the presently claimed invention.

Lu et al. does not teach or suggest each feature of the presently claimed invention.

Therefore, applicants respectfully request that the rejection of claims 1-3, 12 and 22 under 35 U.S.C. § 102(a) as being anticipated by Lu et al., be withdrawn.

New Claims

By the present amendment, Applicants added new claims 23 and 24. Claims 23 and 24 depend from claims 1 and 22, respectively and recite "wherein, in step (ii), a reactive compound comprises the photosensitive group and a functional group and the functional group reacts with the terminal reactive group to the monolayer." Support for this claim may be found throughout the specification and at least at page 9, lines 6-15.

Claims 23 and 24 are patentable for at least the reasons claims 1 and 22 are patentable. Also, Lu et al. does not disclose or suggest the reaction of a functional group (of a reactive compound comprising a photosensitive group) with a terminal

group from the monolayer. In Lu et al. there is not a separate functional group, on a reactive compound comprising a photosensitive group, which reacts with terminal groups from the monolayer. Accordingly, claims 23 and 24 are patentable over the cited art.

Conclusion

The patent application is believed to be in condition for allowance. Accordingly, favorable reexamination and reconsideration of this application is respectfully requested.

Should any questions arise in connection with this application or should the Office believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues, the Office is invited to call the undersigned at the number below.

Respectfully submitted,
BUCHANAN INGERSOLL PC

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